Response to North Dakota's Allegations About Minnesota's Inter-basin Transfers of Water & Closed Basin Outlets

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The North Dakota Water Commission prepared an undated document titled "Biota Transfer in the United States and Canada" that purports to show inconsistencies with projects in Minnesota and Minnesota's position on Devil's Lake and the diversions proposed by the Dakota Water Resources Act. They identify locations of inter-basin transfer projects in Minnesota (apparently taken from a 1988 USGS Report) and also identify closed basin outlets (see Attachment B). They do not provide any definitions.

The following terms and parameters are used in this response.

- Basins are defined in Minnesota Law 103G.005 as "the drainage basins of the Great Lakes, the Red River of the North, the Mississippi River, or the Missouri River.
- Inter-basin – means between the basins.
- Ground water basin – the areal extent of the ground water resource is not coterminous with the surface water basin. Surface water and ground water are not considered to have identical boundaries.
- North Dakota identified inter-basin transfers where the source is ground water and the discharge is in the adjacent basin. The ground water basin is not coterminous with the surface watershed boundaries and these are not inter-basin transfers.
- Timing – Communities have developed along the watershed divide over the last 100+ years. Most of the examples used by North Dakota are communities that are over 100 years old.
- CFS – cubic feet per second.

  1 cfs = 448 gallons/minute
  1 cfs for 1 day = 1.983 acre-feet = 646.272 gallons/day
  1 cfs for 1 year = 724 acre-feet = 236 mg

Inter-basin Transfer Issue

This issue deals with the Dakota Water Resources Act (Garrison) and if there is an inlet to Devil's Lake it would apply to the Devil's Lake project also. Generally, North Dakota has identified locations along the natural surface water divide where a community's water supply from ground water is on one side of the divide and their wastewater discharge is on the other side. We will discuss each instance specifically, but these are not considered to be inter-basin transfers since the ground water source extends across the natural surface water divide (Attachment A contains maps of each location.). North Dakota alleges that inter-basin diversion projects with known discharges total 4.12 cfs, but based on our analysis, none of these projects are inter-basin transfers.

Minnesota's concern about inter-basin transfer of waters is based on the following:

1) sustainability – Minnesota laws (M.S. 103G.265) are structured to discourage the transfer of water between basins. The Lewis and Clark Water Supply project in southeastern South Dakota, northwestern Iowa, and southwestern Minnesota originally had proposed a distribution area that went into the Mississippi River Basin. As a condition, by the State of Minnesota, the project boundaries were adjusted so Missouri River water was only being supplied to the Missouri River Basin area of Minnesota. This avoids an inter-basin transfer.

2) biota transfer - With respect to aquatic biota transfer issues, basins are separate large landscapes with separate sets of inherently complex aquatic habitats that do not have an aquatic connection. We are concerned both about the potential movement of invasive or exotic species known to be in one basin but not the other, as well as the possibility of a species not known to be in either basin being able to infest both basins because of the connection. This topic is of concern because invasive exotic species infestations are known to have very high economic costs and cause extensive ecological damage. Biota transfer occurring in groundwater would not normally be an issue unless there were special circumstances such as karst formations, or other relatively unique situations where very small dormant life stages might percolate through porous formations. The Red River Basin does not have karst formations.

3) Consistency with Great Lakes policy - The eight Great Lakes states have had concerns over inter-basin diversions for many years. The Great Lakes Charter adopted in 1985 required a notice and consultation between the states to evaluate larger diversions and consumptive uses. In 1986 Congress passed a law (WRDA 1986) requiring the approval of all eight Great Lakes governors before any water could be diverted out of the Great Lakes basin. Minnesota has enacted laws that discourage inter-basin diversions and, in fact, require the specific legislative approval before an inter-basin diversion could occur. We believe it is only appropriate to have consistent standards in each of our basins and on all of our borders.

New York Mills

North Dakota alleges - that an inter-basin diversion of 0.3 cfs exists from the Mississippi to the Red Basin at New York Mills for sewer and that an inter-basin diversion of .015 cfs from the Red to the Mississippi Basin exists at New York Mills for water supply.

Minnesota's Response – New York Mills straddles the basin boundary with 1/3 of the town in the Mississippi Basin and 2/3 in the Red Basin. The ground water source (city well) is in the Red Basin and is 122 feet deep. The wastewater treatment facility is in the Red Basin. This is not an inter-basin transfer of water. The 2002 pumping was 48 mg.

Donnelly

North Dakota alleges - that an inter-basin diversion of .015 cfs exists from the Red to the Mississippi Basin at Donnelly.

Minnesota's Response – The City of Donnelly straddles the basin boundary. Donnelly's wells are in the Mississippi Basin and are about 207 feet deep. The ground water system exists on both sides of the basin divide and this is not an inter-basin transfer.

Menze

North Dakota alleges - that an inter-basin transfer of .046 cfs exists from the Red to the Mississippi Basin by Mr. Menze's irrigation system in Ottertail County.

Minnesota's Response – Mr. Menze is appropriating ground water for irrigation and his fields are on both sides of the basin boundary. His well is 85 feet deep and the ground water system exists on both sides of the basin divide. This is not an inter-basin diversion.

Henning

North Dakota alleges - that an inter-basin transfer of .22 cfs exists from the Red to the Mississippi Basin at Henning for water supply and sewer purposes.

Minnesota's Response – The City of Henning straddles the basin boundary. The wells are in the Red Basin and are 120 feet deep. The wastewater treatment plant is in the Mississippi Basin. The ground water system exists on both sides of the basin divide. This is not an inter-basin transfer.

Virginia Mine Dewatering

North Dakota alleges – that an inter-basin transfer of 1.73 cfs exists from the Red to the Great Lakes Basin at Virginia for mine dewatering.

Minnesota's Response – The City of Virginia does not operate any mine dewatering. The surface water divide between the Rainy River/Red River Basin and the Lake Superior/Great Lakes Basin is the Laurentian Divide. This area has been the site of extensive open pit iron mining for over 100 years. Surface flow patterns have been significantly altered. Some mine dewatering does occur along the divide and the water is discharged to the originating watershed to the extent possible. Most of the pumping is discharged to closed tailings basins.

Virginia

North Dakota alleges – that inter-basin transfer of 1.67 cfs from the Red to the Great Lakes Basin occurred at Virginia for sewer purposes.

Minnesota's Response – The City of Virginia water is from wells located in the Lake Superior Watershed and the wastewater treatment plant is in the Lake Superior Watershed. This is not an inter-basin transfer of water.

Lincoln-Pipestone Rural Water

North Dakota alleges - that an inter-basin transfer of 0.22 cfs (two locations) from the Missouri Basin to the Mississippi Basin for public water supply purposes.

Minnesota's Response – Lincoln-Pipestone is a large rural water system in southwestern Minnesota. They use ground water that is treated at the source, conveyed by pipeline, and is used for public water supply purposes. Lincoln Pipestone's wells are on both sides of the major basin divide, as is the service area. They continue to develop wells on both sides of the divide. The watershed divides cannot be assumed to be the same as the surface watershed divides and in this area of the state the numerous aquifers they are using cannot be considered to be connected. It is difficult to quantify any diversion.

Worthington

North Dakota alleges – that an inter-basin transfer of 0.17 cfs from the Missouri Basin to the Mississippi Basin for public water supply purposes.

Minnesota's Response – The City of Worthington straddles the watershed divide and has wells (63 feet deep) located in the Missouri Basin. The Missouri River is part of the Mississippi River Basin. Their wastewater discharge is in the Mississippi Basin. This situation has existed for over 80 years to protect their shallow ground water source. The ground water system exists on both sides of the divide. This is not an inter-basin diversion.

Conclusion

Our analysis of the alleged inter-basin transfers show that the facts do not support North Dakota's allegations. None of the above examples are inter-basin transfers.

Closed Basin Outlets Issue

North Dakota alleges that Minnesota has a double standard because we have allowed landlocked lakes (or closed basin lakes) to install outlets and yet we continue to object to the Devil's Lake outlet. They further state that they only want to be treated equally. They list the maximum discharge rates, and biota controls in their document (attachment B). Seven of the closed basins listed are in the Mississippi Basin and five are in the Red Basin.

Minnesota has allowed outlets for closed basin (landlocked) lakes through a permit approval process. Parameters considered include water quality, discharge rates, effects on receiving waters, and effectiveness. Minnesota DNR's exotics program staff are involved in reviewing closed basin outlet permits and their recommendations get incorporated into the final regulatory decision.

With respect to aquatic biota transfer issues, basins are separate large landscapes with separate sets of inherently complex aquatic habitats that do no have an aquatic connection. We are concerned both about the potential movement of invasive or exotic species known to be in one basin but not the other, as well as the possibility of a species not known to be in either basin being able to infest both basins because of the connection. This topic is of concern because invasive exotic species infestations are known to have high economic costs and cause extensive ecological damage. Biota transfer occurring in groundwater would not normally be an issue. North Dakota compares to past projects and would like to have you draw the conclusion that because some inter-basin transfers exist across the United States and Canada, adding more is ok. We do not agree with their logic.

Minnesota lake outlets have been through permit and environmental review. Staff from DNR's exotic species program have generally participated in reviews for these projects. The lakes and their receiving waters were ecologically similar and water quality parameters were also similar. Risk of biota transfer in these situations has ordinarily been low, due to the scale, local environment and human use of the water bodies. Where biota transfer or other environmental risks have been greater, project modifications or extensive water quality monitoring (like for the Union/Sarah Lakes outlet) have been required.

Devil's Lake water chemistry and quality is significantly different than the Minnesota Lakes in the Red River Valley. In October of 2003, measurements in the eastern part of Devil's Lake were 6000 ppm for TDS and in the West Bay of Devil's Lake measurements were 1400 ppm for TDS and 657 ppm of sulfates. The EIS reported median TDS measurements of the Sheyenne River of 597, 476, and 539ppm. The Red River @ Halstad had a median TDS of 428ppm.

- TDS = Total Dissolved Solids, often referred to as "hardness," is the sum of dissolved inorganic salts, organic matter, and other dissolved substances.
- Sulfates = One of the constituents of TDS. High amounts lead to physiological effects, increased water treatment costs, unpalatable taste, and habitat degradation and unsuitability.
- Mg/l = Parts per million – all parameters above are shown as mg/l.

There aren't identical comparisons, but the order of magnitude difference for TDS is significant. When water chemistry is significantly different than the surrounding waters it raises the level of concern.

We don't have specific numbers for the TDS and sulfate parameters of Minnesota lakes because they aren't a constituent of concern. The Ottertail River has been measured and has TDS of less than 200 mg/l and sulfates of about 20ppm.

Conclusion

Minnesota recognizes that Devil's Lake is part of the Red River Basin (as long as there is not inlet from the Missouri River) and Minnesota has indicated that we would not object to an outlet that met the water quality standards and provided an operationally functional sand filter to address the biota concerns identified through a detailed assessment, survey and design process that has yet to be conducted. If these parameters are met the project would be similar to the outlet projects approved in Minnesota.